AMENDMENTS TO THE CLAIMS

Please amend claims 1, 11, 15, and 17 as follows.

Please cancel claim 12 without prejudice.

Please add new claims 27-29.

1. (Currently amended) A method, comprising:

lithographically patterning ~~a corner~~ an optical waveguide pathway over a material, the optical waveguide pathway including a first branch, a second branch, and a corner where the first branch intersects the second branch;

anisotropically etching portions of the material based on the lithographic pattern to obtain a region of the material that defines the corner; and

isotropically etching additional portions of the material from the region of the material to sharpen the corner.

2. (Cancelled)

3. (Original) The method of claim 1 wherein lithographically patterning the corner includes applying a photoresist material.

4. (Original) The method of claim 3, further comprising removing the photoresist material from selected areas prior to sharpening the corner.

5. (Cancelled)

6. (Original) The method of claim 1 wherein the material comprises a first material, the method further comprising:

placing a second material in the region; and

removing excess second material from areas outside of the region.

6 ~~7.~~ (Original) The method of claim ~~6~~ 5 wherein removing excess second material comprises using a chemical-mechanical polishing technique.

7 ~~8.~~ (Original) The method of claim ~~6~~ 5, further comprising placing a third material over the second material.

8 ~~9.~~ (Original) The method of claim ~~8~~ 7 wherein placing the third material over the second material and placing the second material in the region comprises using a deposition technique.

9 ~~10.~~ (Original) The method of claim ~~8~~ 7 wherein the first and third materials comprise cladding material, and wherein the second material comprises core material.

10 ~~11.~~ (Currently amended) The method of claim 1 wherein the first branch, the second branch, and the corner ~~comprises~~ comprise part of a Y-branch of an optical waveguide of an integrated optical device.

12. (Cancelled)

11 ~~13.~~ (Original) The method of claim 1 wherein the corner comprises part of one of a microelectromechanical structure (MEMS) device, a photonic crystal device, or a photonic bandgap device.

12 ~~14.~~ (Original) The method of claim 1, further comprising monitoring the removal of the portions of the material adjacent to the region if sufficient time has elapsed to sharpen the corner.

13 ~~15.~~ (Currently amended) The method of claim ~~14~~ 12 wherein monitoring the removal of the portions of the material adjacent to the region comprises:

forming a diffraction grating having pillars of a substantially same radius as the corner to be sharpened, wherein the corner is rounded;

illuminating the pillars with a light and detecting light diffracted from the pillars;

~~removing~~ isotropically etching the pillars concurrently with isotropically etching additional portions of the material from the region of the material ~~removing portions of the material adjacent to the region~~; and

determining if sufficient time has elapsed to sharpen the corner based on the detected light diffracted from the pillars as they are ~~removed~~ isotropically etched.

4 ~~16.~~ (Original) The method of claim ~~15~~ 2 wherein the corner is sharpened while the photoresist is in place.

14 ~~17.~~ (Currently amended) A method, comprising:

lithographically patterning a Y-branch optical waveguide pathway over a cladding material deposited on a substrate, the Y-branch optical waveguide pathway including a corner where a first branch of the Y-branch optical waveguide pathway splits into a second branch and a third branch of the Y-branch optical waveguide pathway;

~~lithographically patterning a corner over a cladding material deposited on a substrate;~~

based on the lithographic pattern, vertically etching the cladding material to selectively remove portions of the cladding material to ~~define~~ form a rounded corner in the cladding material based on the corner of the Y-branch optical waveguide pathway; and

isotropically etching the cladding material to selectively remove additional portions of the cladding material at the rounded corner to sharpen the rounded corner.

15 ~~18.~~ (Original) The method of claim ~~17~~ 14, further comprising depositing a core material in a trench, adjacent to the sharpened corner, which was formed by the vertical etching and by the isotropic etching.

16 ~~19.~~ (Original) The method of claim ~~18~~ 15, further comprising depositing another cladding material over the core material, subsequent to a chemical-mechanical polish process to remove excess core material deposited outside of the trench.

17 ~~20.~~ (Original) The method of claim ~~17~~ 14, further comprising:

forming pillars concurrently with the vertical etching of the cladding material, the pillars having a dimension comparable to that of the rounded corner; and

isotropically etching the pillars concurrently with the rounded corner to determine completion of the sharpening based on light diffracted from the pillars.

18 ~~21.~~ (Original) The method of claim 17 14 wherein lithographically patterning the corner includes using a photoresist.

Claims 22-26 (Cancelled).

27. (New) A method, comprising:

lithographically patterning a corner over a cladding material deposited on a substrate;

based on the lithographic pattern, vertically etching the cladding material to selectively remove portions of the cladding material to define a rounded corner;

isotropically etching the cladding material to selectively remove additional portions of the cladding material at the rounded corner to sharpen the rounded corner;

forming pillars concurrently with the vertical etching of the cladding material, the pillars having a dimension comparable to that of the rounded corner; and

isotropically etching the pillars concurrently with the rounded corner to determine completion of the sharpening based on light diffracted from the pillars.

28. (New) The method of claim 19 wherein the corner comprises a portion of a Y-branch of an optical waveguide.

29. (New) The method of claim 19, further comprising:

depositing a core material in a trench, adjacent to the sharpened corner, which was formed by the vertical etching and by the isotropic etching; and

depositing another cladding material over the core material, subsequent to a chemical-mechanical polish process to remove excess core material deposited outside of the trench.